

ABSTRACT OF THE DISCLOSURE

A method for loading a biological sample comprising loading a biological sample with a solute and dimethylsulfoxide (DMSO) by fluid phase endocytosis to produce an internally loaded biological sample. A dehydrated composition is provided that includes dried biological samples containing dimethylsulfoxide and a solute. A method for increasing the survival of biological samples comprising providing biological samples, loading the biological samples with a carbohydrate and dimethylsulfoxide to produce loaded biological samples, and drying (e.g., air drying or vacuum drying) the loaded biological samples while maintaining a residual water content in the biological samples of at least about 0.01 gram water per gram of dry weight of biological samples to increase survival of the biological samples upon rehydrating.